

1260 VXI SWITCHING CARD

1260-167 A/B RF MUX PLUG-IN

PUBLICATION NO. 980824-167

RACAL INSTRUMENTS

Racal Instruments, Inc.

4 Goodyear St., Irvine, CA 92618-2002
Tel: (800) RACAL-ATE, (800) 722-2528, (949) 859-8999; FAX: (949) 859-7139

Racal Instruments, Ltd.

480 Bath Road, Slough, Berkshire, SL1 6BE, United Kingdom
Tel: +44 (0) 1628 604455; FAX: +44 (0) 1628 662017

Racal Systems Electronique S.A.

18 Avenue Dutartre, 78150 LeChesnay, France
Tel: +33 (1) 3923 2222; FAX: +33 (1) 3923 2225

Racal Systems Elettronica s.r.l.

Strada 2-Palazzo C4, 20090 Milanofiori Assago, Milan, Italy
Tel: +39 (0)2 5750 1796; FAX +39 (0)2 5750 1828

Racal Elektronik System GmbH.

Technologiepark Bergisch Gladbach, Friedrich-Ebert-Strasse, D-51429 Bergisch Gladbach, Germany
Tel.: +49 2204 8442 00; FAX: +49 2204 8442 19

Racal Australia Pty. Ltd.

3 Powells Road, Brookvale, NSW 2100, Australia
Tel: +612 9936 7000, FAX: +612 9936 7036

Racal Electronics Pte. Ltd.

26 Ayer Rajah Crescent, 04-06/07 Ayer Rajah Industrial Estate, Singapore 0513.
Tel: +65 7792200, FAX: +65 7785400

Racal Instruments, Ltd.

Unit 5, 25F., Mega Trade Center, No 1, Mei Wan Road, Tsuen Wan, Hong Kong, PRC
Tel: +852 2405 5500, FAX: +852 2416 4335

<http://www.racalstruments.com>



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2. Product model number
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You may contact your customer service advisor by:

E-Mail:	Helpdesk@racalstruments.com	
Telephone:	+1 800 722 3262	(USA)
	+44(0) 8706 080134	(UK)
	+852 2405 5500	(Hong Kong)
Fax:	+1 949 859 7309	(USA)
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RETURN of PRODUCT

Authorization is required from Racal Instruments before you send us your product for service or calibration. Call your nearest Racal Instruments support facility. A list is located on the last page of this manual. If you are unsure where to call, contact Racal Instruments, Inc. Customer Support Department in Irvine, California, USA at 1-800-722-3262 or 1-949-859-8999 or via fax at 1-949-859-7139. We can be reached at: helpdesk@racalstruments.com.

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FOR YOUR SAFETY

Before undertaking any troubleshooting, maintenance or exploratory procedure, read carefully the **WARNINGS** and **CAUTION** notices.

This equipment contains voltage hazardous to human life and safety, and is capable of inflicting personal injury.

If this instrument is to be powered from the AC line (mains) through an autotransformer, ensure the common connector is connected to the neutral (earth pole) of the power supply.

Before operating the unit, ensure the conductor (green wire) is connected to the ground (earth) conductor of the power outlet. Do not use a two-conductor extension cord or a three-prong/two-prong adapter. This will defeat the protective feature of the third conductor in the power cord.

Maintenance and calibration procedures sometimes call for operation of the unit with power applied and protective covers removed. Read the procedures and heed warnings to avoid "live" circuit points.

Before operating this instrument:

1. Ensure the instrument is configured to operate on the voltage at the power source. See Installation Section.
2. Ensure the proper fuse is in place for the power source to operate.
3. Ensure all other devices connected to or in proximity to this instrument are properly grounded or connected to the protective third-wire earth ground.

If the instrument:

- fails to operate satisfactorily
- shows visible damage
- has been stored under unfavorable conditions
- has sustained stress

Do not operate until performance is checked by qualified personnel.

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Table of Contents

Chapter 1	
SPECIFICATIONS	1-1
Introduction – 1260-167A/B	1-1
Power Dissipation – 1260-167A/B	1-3
Ordering Information.....	1-4
Chapter 2	
INSTALLATION INSTRUCTIONS	2-1
Unpacking and Inspection	2-1
Reshipment Instructions	2-2
Installation:.....	2-2
Module Configuration.....	2-2
Front Panel Connectors 1260-167A.....	2-2
Front Panel Connectors 1260-167B.....	2-4
Mating Connectors.....	2-6
Chapter 3	
MODULE OPERATION.....	3-1
Reply to the MOD:LIST? Command	3-1
Operating in Register-Based Mode.....	3-2
1260-167 Example Code.....	3-6
Chapter 4	
DRAWINGS	4-1
Chapter 5	
PARTS LIST.....	5-1
Chapter 6	
PRODUCT SUPPORT.....	6-1

Product Support 6-1
Warranty 6-1
Reshipment Instructions 6-2
Support Offices 6-2

List of Figures

Figure 1-1, 1260-167B 1-1

Figure 2-1, 1260-167A SMA Connector Designations 2-2

Figure 2-2, 1260-167A Relay Diagram 2-3

Figure 2-3, 1260-167A Block Diagram..... 2-3

Figure 2-4, 1260-167A SMA Connector Designations 2-4

Figure 2-5, 1260-167B SMA Connector Designations..... 2-5

Figure 2-6, 1260-167B Block Diagram 2-5

List of Tables

Table 3-1, Register Offset Addresses of the 1260-167 Module 3-3

Table 3-2, ID Register Functionality of the 1260-167..... 3-3

Table 3-3, Port A Register Functionality of the 1260-167 Module..... 3-4

Table 3-4, Port B Register Functionality of the 1260-167 Module 3-4

Table 3-5, EPROM Descriptor Functionality of the 1260-167 Module..... 3-5

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Chapter 1

SPECIFICATIONS

Introduction – 1260-167A/B

The 1260-167A and 1260-167B are RF plug-in switch modules developed for a variety of Racal Instrument platforms such as the 1260-100 Adapt-a-Switch Carrier and the 1256 Switching System. These switches are software-configurable single (-167A) and dual 1X6 (-167B) RF multiplexers for DC to 18GHz.

The 1260-167 modules include the following features:

- Standard Adapt-a-Switch™ and 1256 Switching System plug-in design, providing for ease of replacement.
- Data-Driven embedded descriptor, allowing immediate use with any platform compatible with the Adapt-a-Switch standard, regardless of firmware level.



Figure 1-1, 1260-167B

Specifications – 1260-167A/B

Input / Output Specifications					
Frequency Range (GHz)		DC-3	3-8	8-12.4	12.4-18
VSWR (Max dB)		1.15:1	1.25:1	1.35:1	1.45:1
Insertion loss (Max dB)		0.15	0.25	0.24	0.45
Isolation (Max dB)		85	75	65	65
RF Input Power					
Frequency Range (GHz)		DC-0.1	0.1-1	1.10	10.18
Max Input Power (Watts)		490	180	60	50
Relay Operate Time		15m sec typical			
Switch Contact Lifetime		1 Million cycles per position			
Available I/O Channels		Single 1x6 RF Mux			
Shock		30g, 11 ms, ½ sine wave			
Vibration		0.013 in. P-P, 5-55 Hz			
Bench Handling		4 in., 45°			
Cooling		See 1260-100 cooling data			
Temperature					
Operating		-20°C to +60°C			
Non-operating		-40°C to +75°C			
Relative Humidity		95 +/-5% RH non condensing; 75+/-5 %RH above 30°C; 45+/-5 %RH above 40°C			
Altitude					
Operating		10,000 feet			
Non-operating		15,000 feet			
Power Requirements		1260-167A	1260-167B		
+5 VDC Amps Maximum		1.15A	2.15A		
Weight		1260-167A	1260-167B		

	6.9 oz (1.95Kg)	9.8 oz (2,78Kg)
Mean Time Between Failures (MTBF)	1260-167A	869,262 Hours
	1260-167B	563,629 Hours
	Calculated per MIL-HBK-217, ground-benign, 30°C, as design goal (RF relay MTBF 1,000,000 operations per switch at rated load)	
Mean Time to Repair (MTTR)	< 5 minutes	

Power Dissipation – 1260-167A/B

The cooling of the Adapt-a-Switch carrier is dependent upon the chassis into which it is installed. The carrier can nominally dissipate approximately 100W. Even with all channels driven to maximum outputs, up to two 1260-167A plug-ins may be used together in a 1260-100 without exceeding the maximum allowable power dissipation of the carrier.

If the 1260-167A will be used in conjunction with other cards, the dissipation should be computed and summed with the total worst-case dissipation of the remaining modules.

For example, a 1260-167A module would dissipate the following energy:

Quiescent power dissipation = 0.75W maximum

With one coil energized = 5.75 W maximum

For example, a 1260-167B module would dissipate the following energy:

Quiescent power dissipation = 0.75W maximum

With one coil energized = 5.75 W maximum

With two coils energized = 10.75 W maximum

This is acceptable power dissipation for an individual plug-in module. If one additional module is likewise loaded, then the overall carrier dissipation is approximately 11.5W for the –167A and 21.5W for the –167B, both of which are well within the cooling available in most commercial VXIbus chassis.

Ordering Information

Listed below are part numbers for both the 1260-167 switch module and available mating connector accessories. Each 1260-167 uses a single mating connector.

ITEM	DESCRIPTION	PART #
1260-167A RF Mux Module	Switch Module, 1x6 DC-18 GHz Consists of: P/N 405168-001 PCB Assy P/N 980824-167 Manual	407773-001
1260-167B RF Mux Module	Switch Module, 2 (1x6) DC-18 GHz Consists of: P/N 405168-002 PCB Assy P/N 980824-167 Manual	407773-002
Additional Manual		980824-167

INSTALLATION INSTRUCTIONS

Unpacking and Inspection



1. Before unpacking the switching module, check the exterior of the shipping carton for any signs of damage. All irregularities should be noted on the shipping bill and reported.

CAUTION

ESD sensitive devices. Open the instrument at an ESD safe work station.

WARNING

Connections to the 1260-167 module should be made with all RF power removed.

2. Remove the instrument from its carton, preserving the factory packaging as much as possible.
3. Inspect the switching module for any defects or damage. Immediately notify the carrier if any damage is apparent.
4. Have a qualified person check the instrument for safety before use.

Reshipment Instructions

1. Use the original packing material when returning the switching module to Racal Instruments for servicing. The original shipping carton and the instrument's plastic foam will provide the necessary support for safe reshipment.
2. If the original packing material is unavailable, wrap the switching module in an ESD Shielding bag and use plastic spray foam to surround and protect the instrument.
3. Reship in either the original or a new shipping carton.

Installation:

For instructions on installing the 1260-167 into a switching platform, refer to the user manual for that platform, in the "Getting Started" chapter under the "Inserting and Removing Plug-ins" section. Manuals are available at the Racal Instruments' web site: <http://www.racalstruments.com>.

Module Configuration

The 1260-167 modules are software-selectable multiplexer plug-ins for Racal Instruments switching platforms such as Adapt-a-Switch and 1256 System. The 1260-167A is a single 1X6 RF multiplexer, and the 1260-167B is a dual 1X6 RF multiplexer.

Front Panel Connectors 1260-167A

The 1260-167A has one front panel RF relay, labeled SW1, with 7 SMA connectors. See Figure 2-1 for SMA connector designations. See Figure 2-2 for the relay diagram, and Figure 2-3 for a block diagram of the 1260-167A.

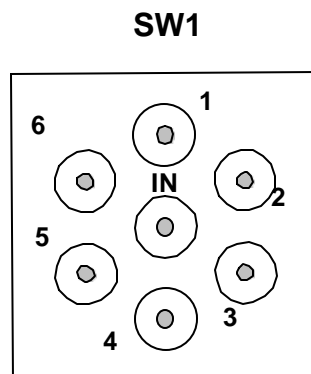


Figure 2-1, 1260-167A SMA Connector Designations

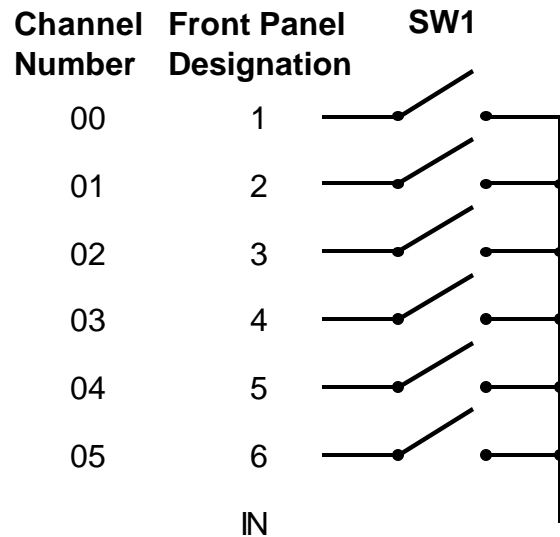


Figure 2-2, 1260-167A Relay Diagram

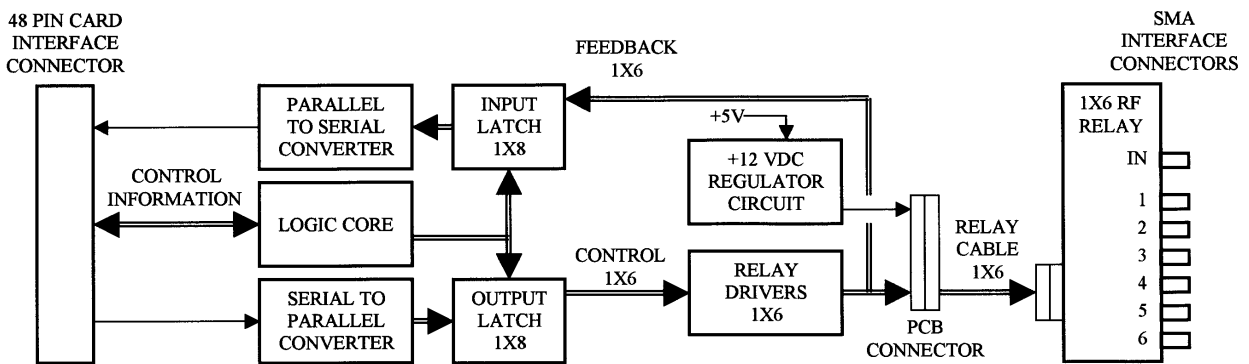


Figure 2-3, 1260-167A Block Diagram

**Front Panel
Connectors 1260-
167B**

The 1260-167B has two front panel RF relays, labeled SW1 and SW2, with 7 SMA connectors each. See Figure 2-4 for SMA connector designations. See Figure 2-5 for the relay diagram and Figure 2-6 for a block diagram of the 1260-167B.

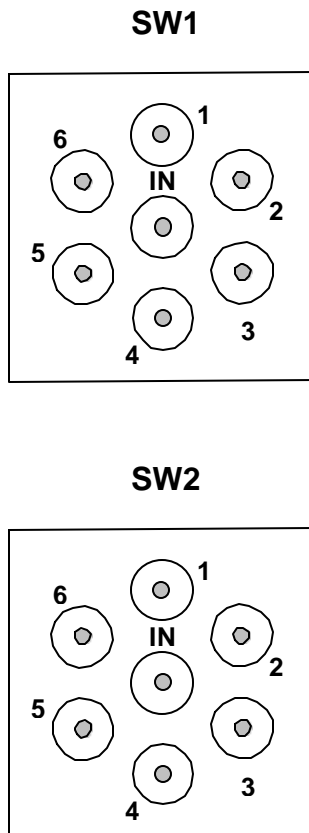


Figure 2-4, 1260-167A SMA Connector Designations

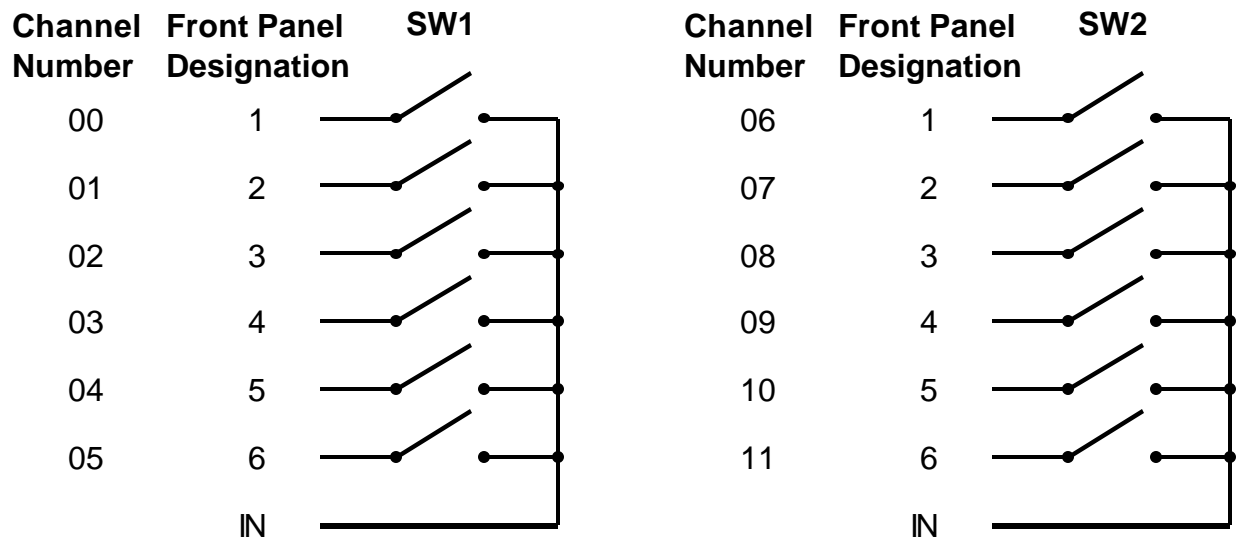


Figure 2-5, 1260-167B SMA Connector Designations

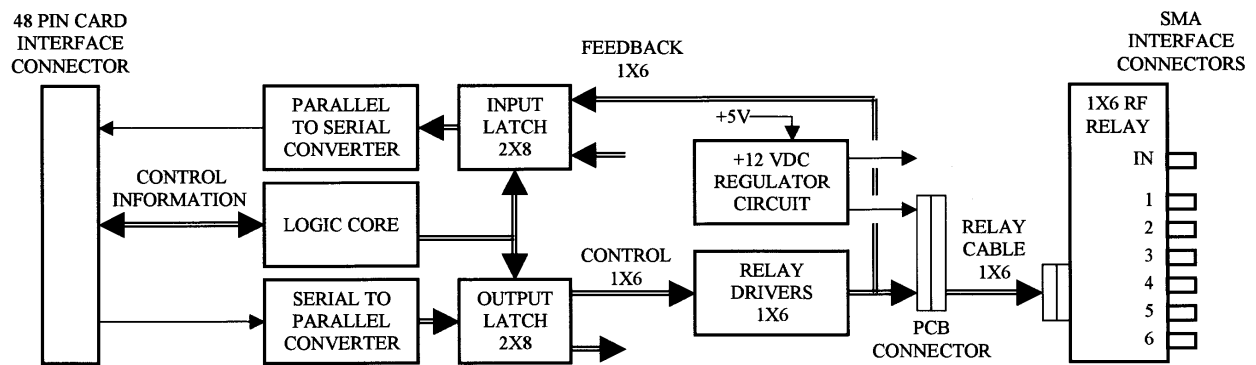


Figure 2-6, 1260-167B Block Diagram

Mating Connectors

Mating connectors are SMA type. Use connectors that are suitable for the type of connecting coax and frequency range to be used.

MODULE OPERATION

Reply to the MOD:LIST? Command

The platform containing the 1260-167 returns a reply to the MOD:LIST? command. This reply is unique for each different 1260 series switch module. The syntax for the reply is:

<module address> : <module-specific identification string>

The value of <module-specific identification string> for the 1260-167 depends on the version (1260-167A or 1260-167B). For the single 1x6 switch (1260-167A), the string value is:

```
1260-167A SINGLE 1x6 RF SWITCHING MODULE
```

For the two 1x6 switch (1260-167B), the string value is:

```
1260-167B DUAL 1x6 RF SWITCHING MODULE
```

Thus, for a 1260-167A whose module address is 2, the reply to this query would be:

```
2 : 1260-167A SINGLE 1x6 RF SWITCHING  
MODULE
```

Operating in Register-Based Mode

The 1260-167 offers register-based mode when installed in VXI platforms that support it. In register-based mode, the 1260-167 is operated by directly writing and reading to/from ports controlling eight relays each. To access the various registers the following details must be assembled to generate an absolute address that can be wrote or read from:

The port and control registers are located in the VXIbus A24 Address Space. The A24 address for a port or control register depends on:

1. The A24 Address Offset assigned to the 1260-01T module by the Resource Manager program. The Resource Manager program is provided by the VXIbus slot-0 controller vendor. The A24 Address Offset is placed into the "Offset Register" of the 1260-01T by the Resource Manager.
2. The <module address> of the 1260-167 module. This is a value in the range from 1 and 12 inclusive.
3. The 1260-167 port or control register to be written to or read from. Each register on the 1260-167 has a unique offset from the base address.

The base A24 address for the 1260-167 module may be calculated by:

$$(A24 \text{ Offset of the } 1260-01T) + (1024 \times \text{Module Address of } 1260-167).$$

The A24 address offset is usually expressed in hexadecimal. A typical value of 204000_{16} is used in the examples that follow.

A 1260-167 with a module address of 7 would have the base A24 address computed as follows:

$$\begin{aligned} \text{Base A24 Address of } 1260-167 &= 204000_{16} + (400_{16} \times 7_{10}) \\ &= 205C00_{16} \end{aligned}$$

The port and control registers for Adapt-a-Switch plug-ins and conventional 1260-Series modules are always on odd-numbered A24 addresses. For port registers, the 1260-167 reads and writes to the same location. For control registers, the 1260-167 writes to one location, but reads back from another. **Table 3-1 and 3-5** provides offsets relative to the base address of the module for all port and control registers of the 1260-167. To obtain the absolute address where data is to be written or read from, the base address is added to the offset:

(Base A24 1260-167 Address) + offset = absolute address

So, for our example base A24 address computed earlier, the following absolute addresses would apply for the operations indicated:

205C01 Port A read or written at this location

205E01 ID register read at this location

Before explaining the particulars of reading and writing to port and control registers, it is necessary to understand how the registers interact with the 1260-167 relays. **Table 3-1, through 3-5** provide a detailed explanation of each register and how it interacts with the 1260-167 module.

Table 3-1, Register Offset Addresses of the 1260-167 Module

Register Name	Register Offsets to Add to Base Module Address	
	Write Location (hexadecimal)	Read Location (hexadecimal)
Port A	0x01	0x01
Port B	0x03	0x03
ID	Read Only	0x201
EPROM Descriptor	Read Only	0x203

Table 3-2, ID Register Functionality of the 1260-167

Register Table		ID Register
Module Version	Bit	Functionality Description
All	0	Always Reads 0x00 (Read Only)
	1	
	2	
	3	
	4	
	5	
	6	
	7	

Table 3-3, Port A Register Functionality of the 1260-167 Module

Register Table		Port A		
Module Version	Bit	Functionality Description		
All	0	Relay SW1-1	(0: switch open	1: switch closed)
	1	Relay SW1-2	(0: switch open	1: switch closed)
	2	Relay SW1-3	(0: switch open	1: switch closed)
	3	Relay SW1-4	(0: switch open	1: switch closed)
	4	Relay SW1-5	(0: switch open	1: switch closed)
	5	Relay SW1-6	(0: switch open	1: switch closed)
	6	(not used)		
	7	(not used)		

Table 3-4, Port B Register Functionality of the 1260-167 Module

Register Table		Port B		
Module Version	Bit	Functionality Description		
-167B only	0	Relay SW2-1	(0: switch open	1: switch closed)
	1	Relay SW2-2	(0: switch open	1: switch closed)
	2	Relay SW2-3	(0: switch open	1: switch closed)
	3	Relay SW2-4	(0: switch open	1: switch closed)
	4	Relay SW2-5	(0: switch open	1: switch closed)
	5	Relay SW2-6	(0: switch open	1: switch closed)
	6	(not used)		
	7	(not used)		

Table 3-5, EPROM Descriptor Functionality of the 1260-167 Module

Register Table		EPROM Descriptor Register
Module Version	Bit	Functionality Description
All	0	Each time this register is read, it advances a memory pointer to the next memory location in the on-board EPROM. To reset this pointer to the beginning, read the ID register. This resets the memory pointer. The descriptor register contains a long string of data, typically used by the Adapt-a-Switch carrier for configuration purposes. Additionally, this data contains the card identification string for the specific type of card (i.e. 1260-167A or 1260-167B). These identification strings are located at EPROM memory locations 0x23 through 0x34.
	1	
	2	
	3	
	4	
	5	
	6	
	7	

Writing to a port location is a straightforward process. Setting a bit high in a port register causes the corresponding relay channel to close.

It is especially important to realize that a single write operation controls eight separate control lines or output devices simultaneously. Therefore if only a single bit change is desired, the following process must be observed.

1. Read the register, inverting the bit pattern.
2. Mask the appropriate bit with an 'AND' operation and a byte mask with all undesired bits set to a '1' and the desired bit set to a '0' or '1' depending on whether the bit is to be set or cleared in the desired register.
3. Write the masked data back into the register.

As simple as this may seem, a number of products reported as faulty and sent back for repair are typically the result of inappropriate register accesses.

Because of the 1260-167 relay driver architecture, registers A and B will read back inverted from what was written to them.

The VISA I/O library may be used to control the module. The VISA function `viOut8()` is used to write a single 8-bit byte to a control register, while `viIn8()` is used to read a single 8-bit byte from the control register. The following code example shows the use of `viOut8()` to update the 1260-167 module.

1260-167 Example Code

```
#include <visa.h>

/* This example shows a 1260-01T at logical address 16 and a VXI/MXI */
/* interface */
#define RI1260_01_DESC    "VXI::16"

/* For a GPIB-VXI interface, and a logical address of 77 */
/* the descriptor would be: "GPIB-VXI::77" */

/* this example shows a 1260-167 with module address 7, port 1,
and write data of 0xAA */
#define MOD_ADDR_167 7
#define PORT_NUMBER 1
#define DATA_ITEM    0xAA

void example_operate_1260_167(void)
{
    ViUInt8 creg_val;
    ViBusAddress portA_addr, offset;
    ViSession hdl1260;    /* VISA handle to the 1260-01T */
    ViSession hdlRM;      /* VISA handle to the resource manager
*/
    ViStatus error;      /* VISA error code */

    /* open the resource manager */
    /* this must be done once in application program */
    error = viOpenDefaultRM (&hdlRM);

    if (error < 0) {
        /* error handling code goes here */
    }

    /* get a handle for the 1260-01T */
    error = viOpen (hdlRM, RI1260_01_DESC, VI_NULL,VI_NULL, &hdl1260);
    if (error < 0) {
        /* error handling code goes here */
    }
}
```



```
/* form the offset for control register 0 */
/* note that the base A24 Address for the 1260-01T */
/* is already accounted for by VISA calls viIn8() and */
/* viOut8() */

/* module address shifted 10 places = module address x 1024 */
portA_addr = (MOD_ADDR_167 << 10) + 1;
offset = portA_addr + (PORT_NUMBER << 1);

error = viOut8 (vi, VI_A24_SPACE, offset, DATA_ITEM);

if (error < 0)

    return( error );

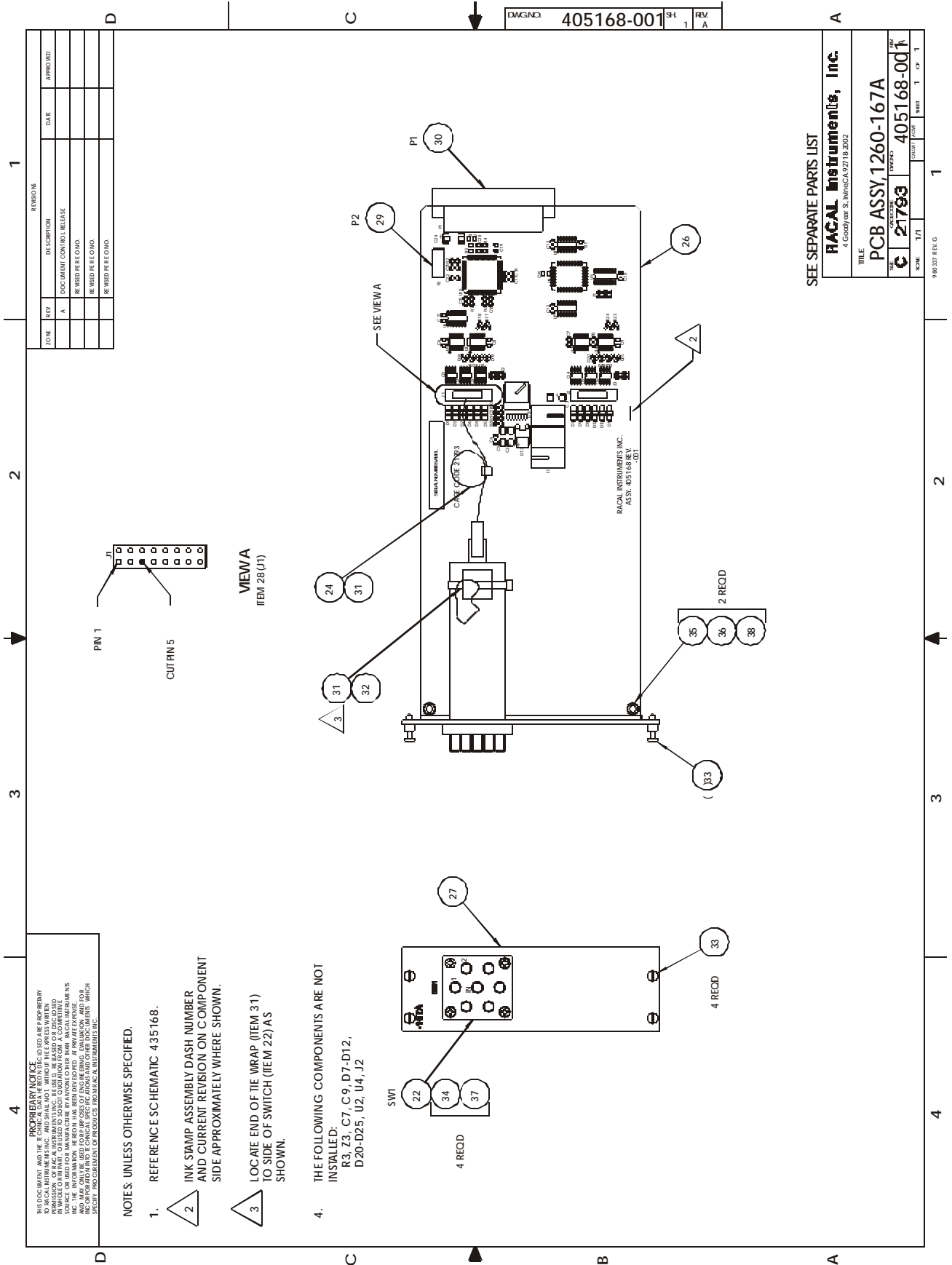
/* close the VISA session */
error = viClose( hdl1260 );
if (error < 0) {
    /* error handling code goes here */
}
}
```

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Chapter 4

DRAWINGS

405168-001	PCB Assy, 1260-167A	4-3
405168-002	PCB Assy, 1260-167B	4-4
435168	Schematic, 1260-167	4-5



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
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		RE VOID PER R.F.O.N.O.		

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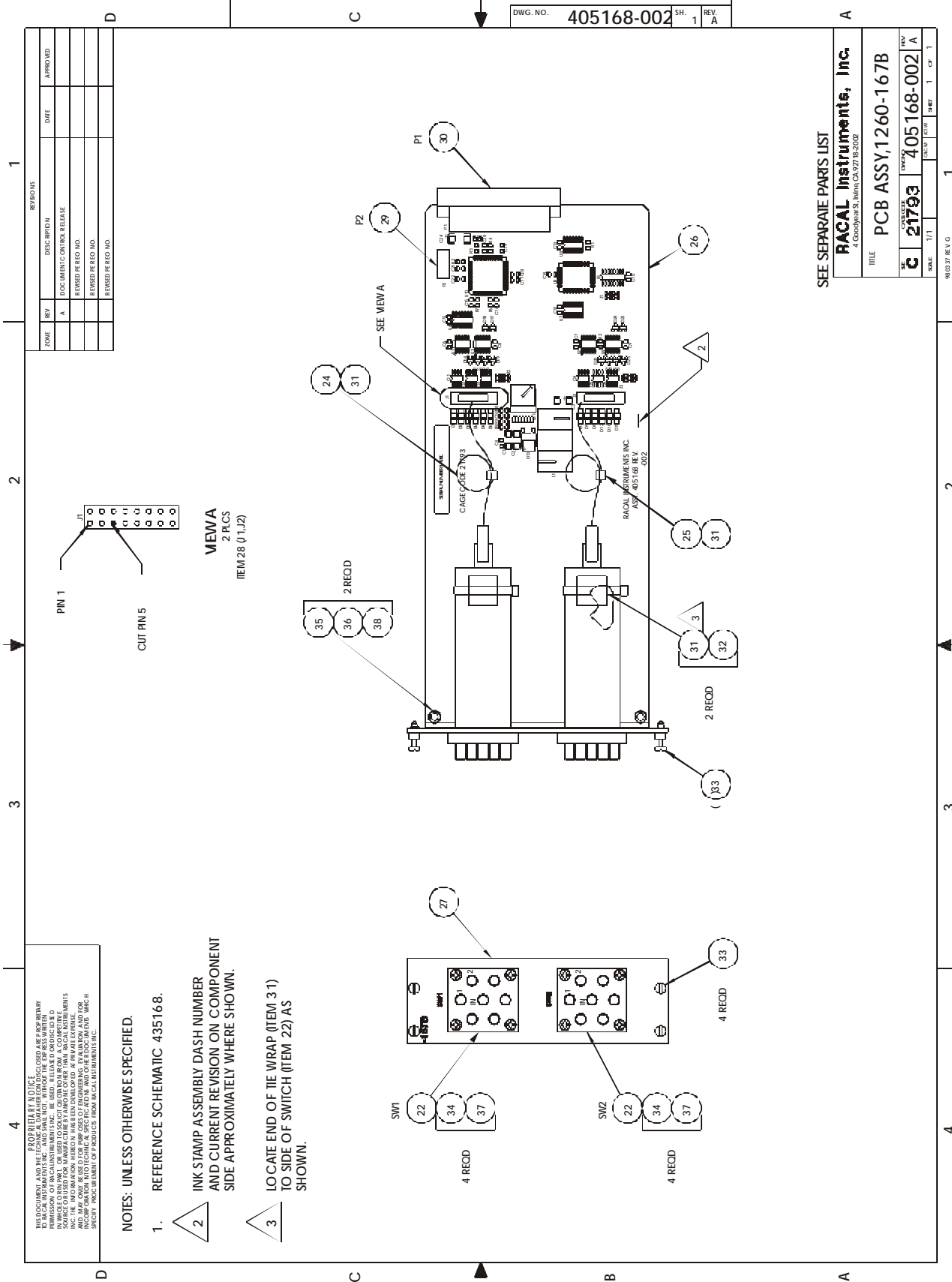
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REV C	ISSUED 2-17-93
DRAWING NO. 405168-001	
SCALE 1/1	SHEET 1 OF 1

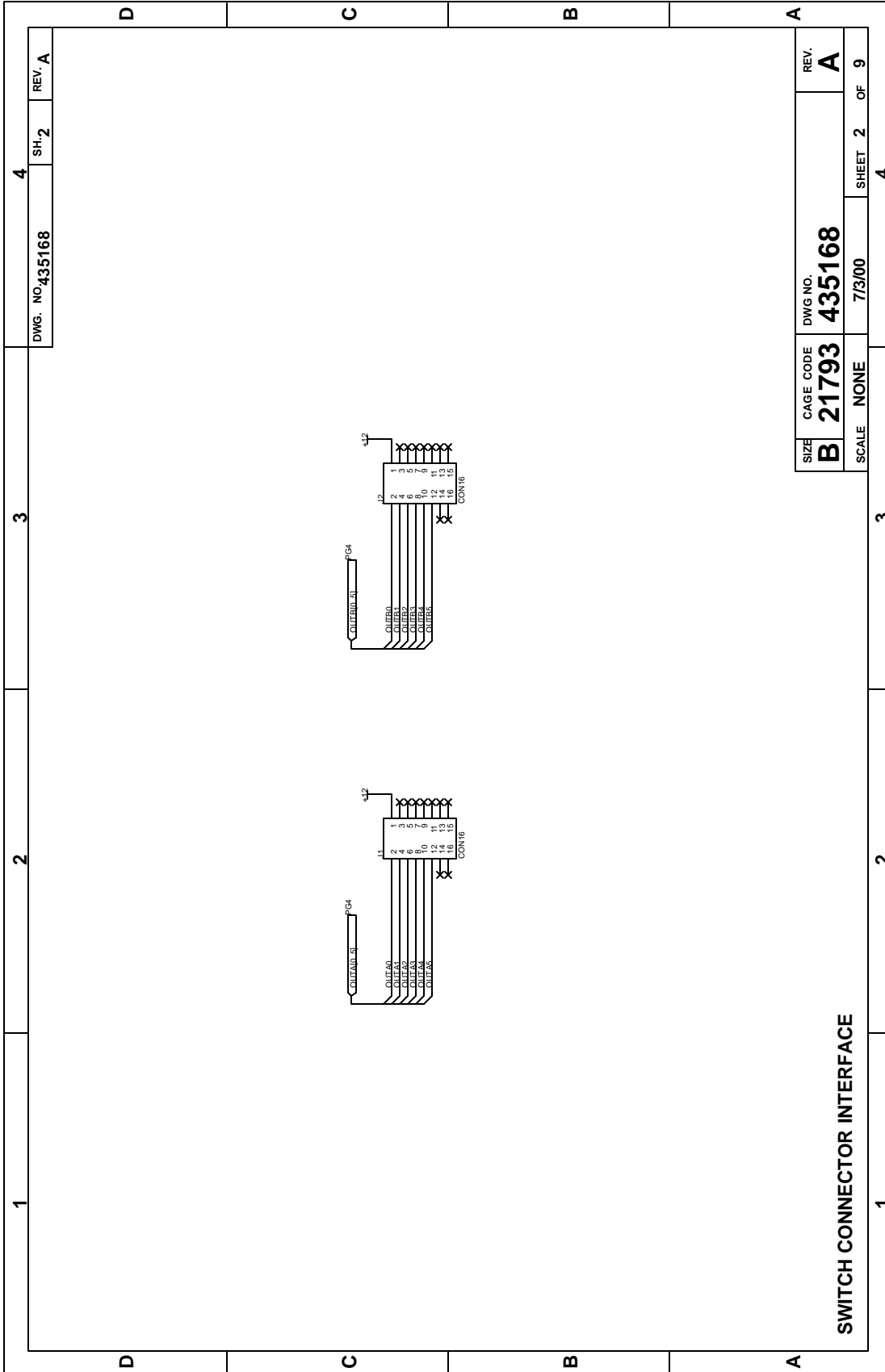
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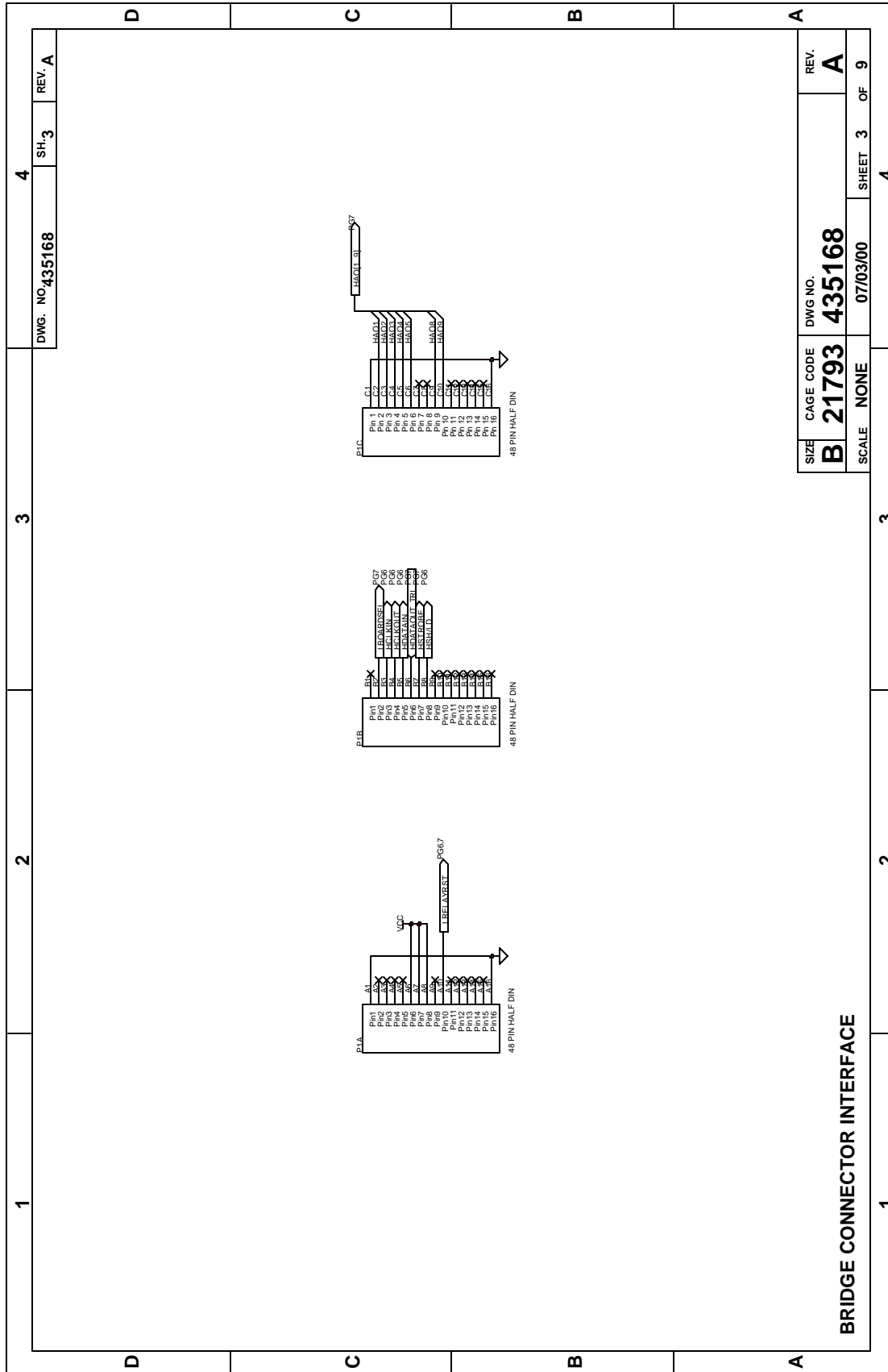
- NOTES: UNLESS OTHERWISE SPECIFIED.**
1. REFERENCE SCHEMATIC 435168.
 2. INK STAMP ASSEMBLY DASH NUMBER AND CURRENT REVISION ON COMPONENT SIDE APPROXIMATELY WHERE SHOWN.
 3. LOC ARE END OF THE WRAP (ITEM 31) TO SIDE OF SWITCH (ITEM 22) AS SHOWN.

4. THE FOLLOWING COMPONENTS ARE NOT INSTALLED:
 R3, Z3, C7, C9, D7-D12, D20-D25, U2, U4, J2



1	2	3	4																																														
<p>NOTES:</p> <p>1. CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.</p> <p>2. RESISTOR VALUES ARE IN OHMS, UNLESS OTHERWISE SPECIFIED.</p> <p>3. ALL DIGITAL PORTS SIGNALS BETWEEN SHEETS ARE INDICATED USING THE FOLLOWING SYNTAX: <ACTIVE LOGIC LEVEL>-<SIGNAL NAME> WHERE ACTIVE LOGIC LEVEL IS INDICATED AS: H - SIGNAL IS ACTIVE HIGH OR CLOCKS ON A LOW TO HIGH TRANSITION L - SIGNAL IS ACTIVE LOW OR CLOCKS ON A HIGH TO LOW TRANSITION NONE - SIGNAL ACTIVITY IS DETERMINED BY SOFTWARE OR USER CONFIGURATION</p> <p>4. RESISTOR NETWORK VALUES ARE IN OHMS, +/-2% UNLESS OTHERWISE SPECIFIED.</p> <p>5. REFER TO PCB ASSY (405168-001 AND 405168-002) FOR UNINSTALLED COMPONENTS.</p> <p>6. INDUCTOR VALUES ARE IN MICROHENRYS, UNLESS OTHERWISE SPECIFIED.</p>	<p style="text-align: center;">DWG. NO. 435168</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:10%;">REV</th> <th style="width:60%;">DESCRIPTION</th> <th style="width:15%;">DATE</th> <th style="width:15%;">APPROVED</th> </tr> <tr> <td style="text-align: center;">A</td> <td>DOCUMENT CONTROL RELEASE</td> <td></td> <td></td> </tr> <tr> <td></td> <td>REVISED PER E.O. NO.</td> <td></td> <td></td> </tr> <tr> <td></td> <td>REVISED PER E.O. NO.</td> <td></td> <td></td> </tr> <tr> <td></td> <td>REVISED PER E.O. NO.</td> <td></td> <td></td> </tr> </table>	REV	DESCRIPTION	DATE	APPROVED	A	DOCUMENT CONTROL RELEASE				REVISED PER E.O. NO.				REVISED PER E.O. NO.				REVISED PER E.O. NO.			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:10%;">REV</th> <th style="width:60%;">DESCRIPTION</th> <th style="width:15%;">DATE</th> <th style="width:15%;">APPROVED</th> </tr> <tr> <td style="text-align: center;">A</td> <td>DOCUMENT CONTROL RELEASE</td> <td></td> <td></td> </tr> <tr> <td></td> <td>REVISED PER E.O. NO.</td> <td></td> <td></td> </tr> <tr> <td></td> <td>REVISED PER E.O. NO.</td> <td></td> <td></td> </tr> <tr> <td></td> <td>REVISED PER E.O. NO.</td> <td></td> <td></td> </tr> </table>	REV	DESCRIPTION	DATE	APPROVED	A	DOCUMENT CONTROL RELEASE				REVISED PER E.O. NO.				REVISED PER E.O. NO.				REVISED PER E.O. NO.			<p style="text-align: center;">SH. 1</p> <p style="text-align: center;">REV A</p>						
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<p style="text-align: center;">© POWER CONNECTIONS</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;">REFERENCE DESIGNATOR(S)</th> <th style="width:35%;">DEVICE TYPE</th> <th style="width:20%;">+ 5 V PIN NO.</th> <th style="width:30%;">GND PIN NO.</th> </tr> </thead> <tbody> <tr> <td>U1-U4</td> <td>74AHCT373</td> <td>20</td> <td>10</td> </tr> <tr> <td>U6</td> <td>74HCT164</td> <td>14</td> <td>7</td> </tr> <tr> <td>U5</td> <td>74HCT166</td> <td>16</td> <td>8</td> </tr> <tr> <td>U7,U8</td> <td>74HCT393</td> <td>14</td> <td>7</td> </tr> <tr> <td>U9</td> <td>27C256</td> <td>32</td> <td>16</td> </tr> <tr> <td>U10</td> <td>231665-002 (EPM70645T)</td> <td>3,18,34,35,51,66,62,91</td> <td>11,26,32,43,57,74,86,95</td> </tr> </tbody> </table>		REFERENCE DESIGNATOR(S)	DEVICE TYPE	+ 5 V PIN NO.	GND PIN NO.	U1-U4	74AHCT373	20	10	U6	74HCT164	14	7	U5	74HCT166	16	8	U7,U8	74HCT393	14	7	U9	27C256	32	16	U10	231665-002 (EPM70645T)	3,18,34,35,51,66,62,91	11,26,32,43,57,74,86,95	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">TITLE</td> </tr> <tr> <td style="width:50%;">RACAL Instruments, Inc. 4 Goodyear St., Irvine, CA. 92618</td> <td style="width:50%;"></td> </tr> <tr> <td colspan="2" style="text-align: center;">SCHEMATIC, 1260-167</td> </tr> <tr> <td style="width:20%;">SIZE</td> <td style="width:20%;">CAGE CODE</td> <td style="width:20%;">DWG NO.</td> <td style="width:40%;">REV.</td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">21793</td> <td style="text-align: center;">435168</td> <td style="text-align: center;">A</td> </tr> <tr> <td style="width:20%;">SCALE</td> <td style="width:20%;">NONE</td> <td style="width:20%;">07/03/00</td> <td style="width:40%;">SHEET 1 OF 9</td> </tr> </table>		TITLE		RACAL Instruments, Inc. 4 Goodyear St., Irvine, CA. 92618		SCHEMATIC, 1260-167		SIZE	CAGE CODE	DWG NO.	REV.	B	21793	435168	A	SCALE	NONE	07/03/00	SHEET 1 OF 9
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<p style="text-align: center;">PROPRIETARY NOTICE</p> <p>THIS DOCUMENT AND THE TECHNICAL DATA HEREON DISCLOSED ARE PROPRIETARY TO RACAL INSTRUMENTS, INC. AND SHALL NOT, WITHOUT THE EXPRESSED WRITTEN PERMISSION OF RACAL INSTRUMENTS, INC. BE REPRODUCED, COPIED, REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF RACAL INSTRUMENTS, INC. AND MAY ONLY BE USED FOR PURPOSES OF ENGINEERING EVALUATION AND FOR INCORPORATION INTO TECHNICAL SPECIFICATIONS AND OTHER DOCUMENTS WHICH SPECIFY PROCUREMENT OF PRODUCTS FROM RACAL INSTRUMENTS, INC.</p>		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%; text-align: center;">AD CURRENT REV/LTR</td> <td style="width:10%; text-align: center;">REV</td> <td style="width:10%; text-align: center;">REV</td> <td style="width:10%; text-align: center;">REV</td> <td style="width:10%; text-align: center;">REV</td> <td style="width:10%; text-align: center;">REV</td> <td style="width:10%; text-align: center;">REV</td> <td style="width:10%; text-align: center;">REV</td> <td style="width:10%; text-align: center;">REV</td> <td style="width:10%; text-align: center;">REV</td> </tr> <tr> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> </tr> </table>		AD CURRENT REV/LTR	REV	REV	REV	REV	REV	REV	REV	REV	REV	9	9	9	9	9	9	9	9	9	9																										
AD CURRENT REV/LTR	REV	REV	REV	REV	REV	REV	REV	REV	REV																																								
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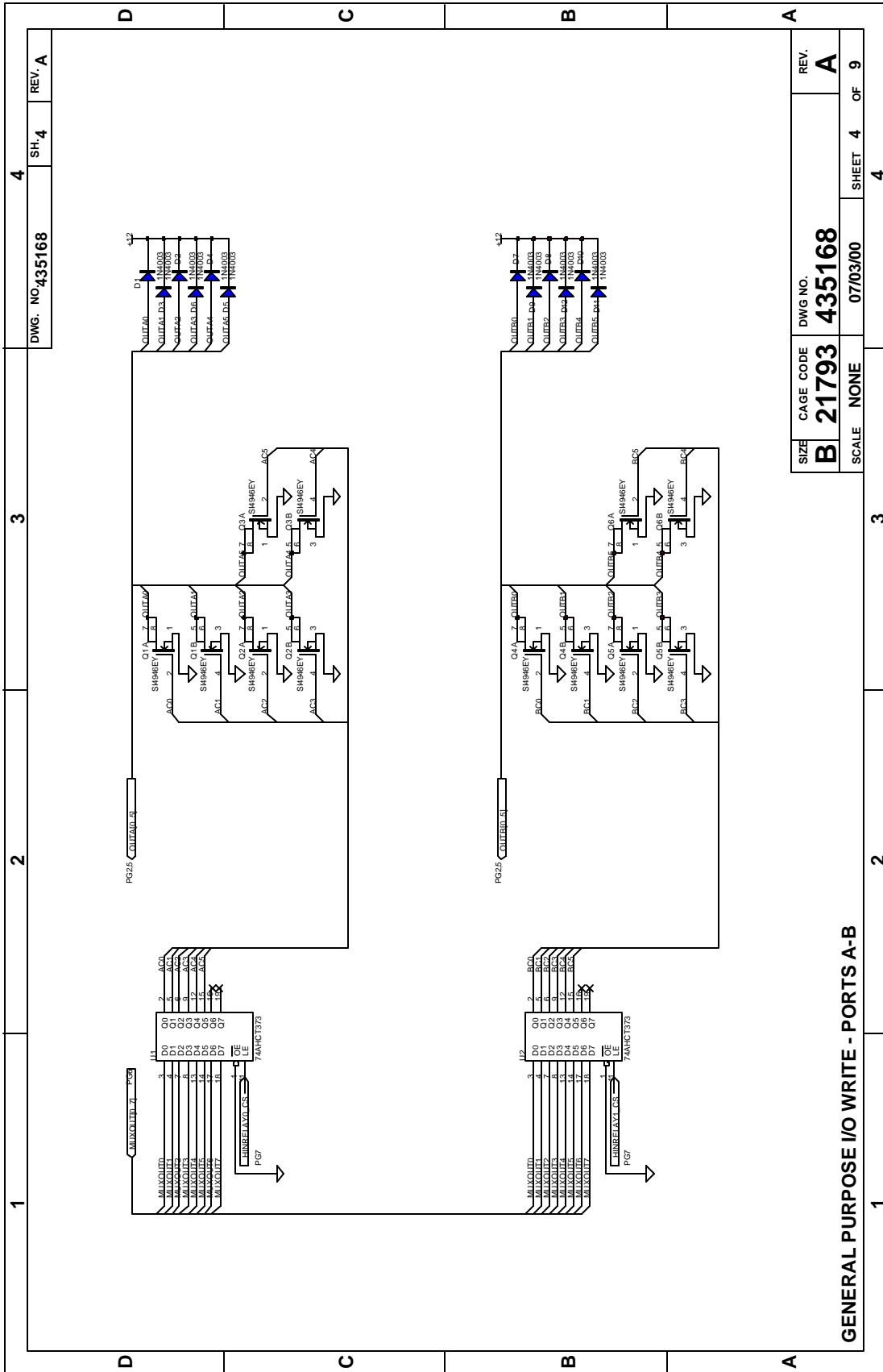




DWG. NO. 435168
SH-3
REV. A

SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435168	A
SCALE	NONE	07/03/00	SHEET 3 OF 9

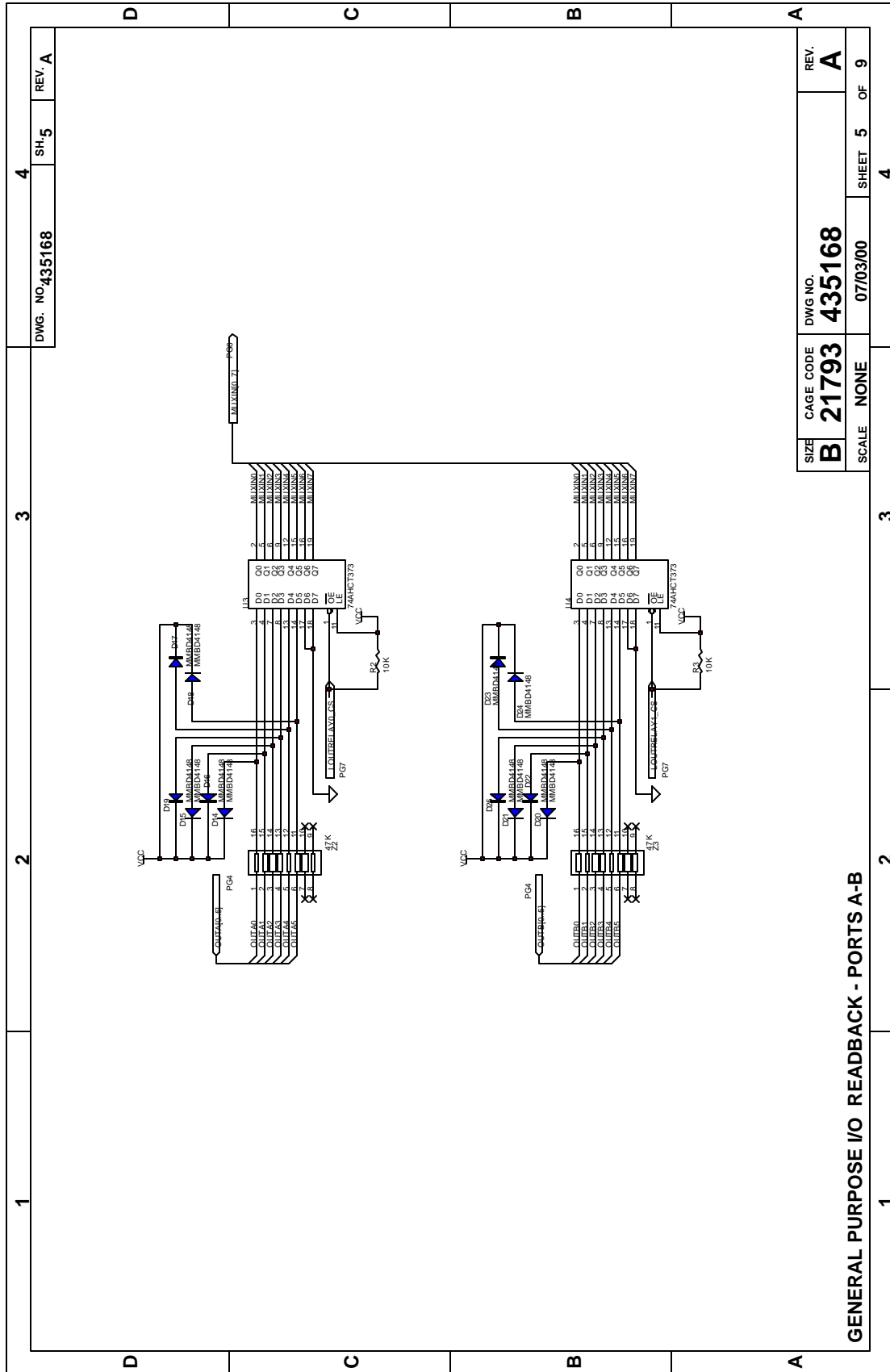
BRIDGE CONNECTOR INTERFACE



DWG. NO. 435168	SH. 4	REV. A
1	2	3
4	4	4

SIZE	CAGE CODE	DWG. NO.	REV.
B	21793	435168	A
SCALE	NONE	07/03/00	SHEET 4 OF 9
			4

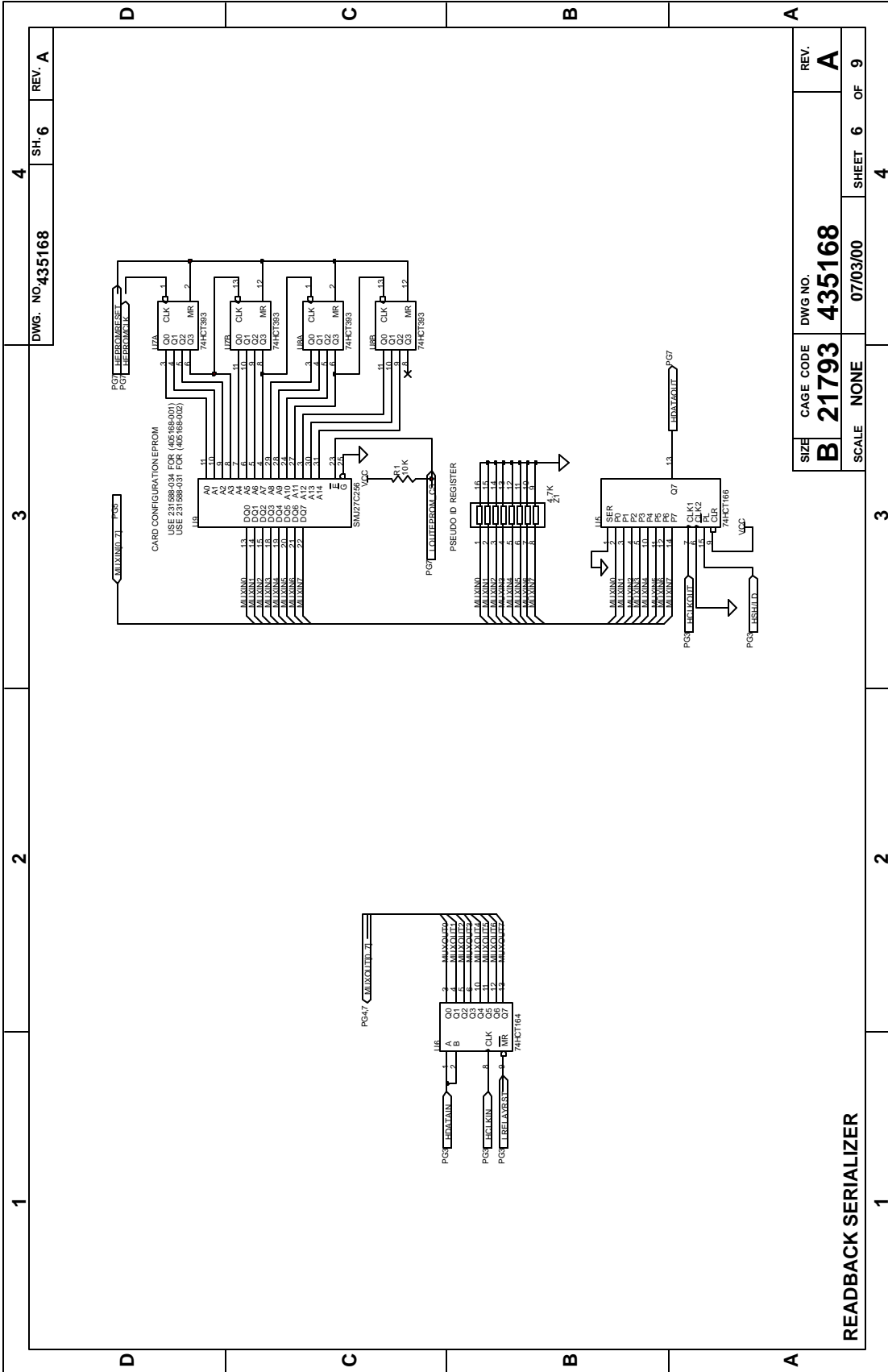
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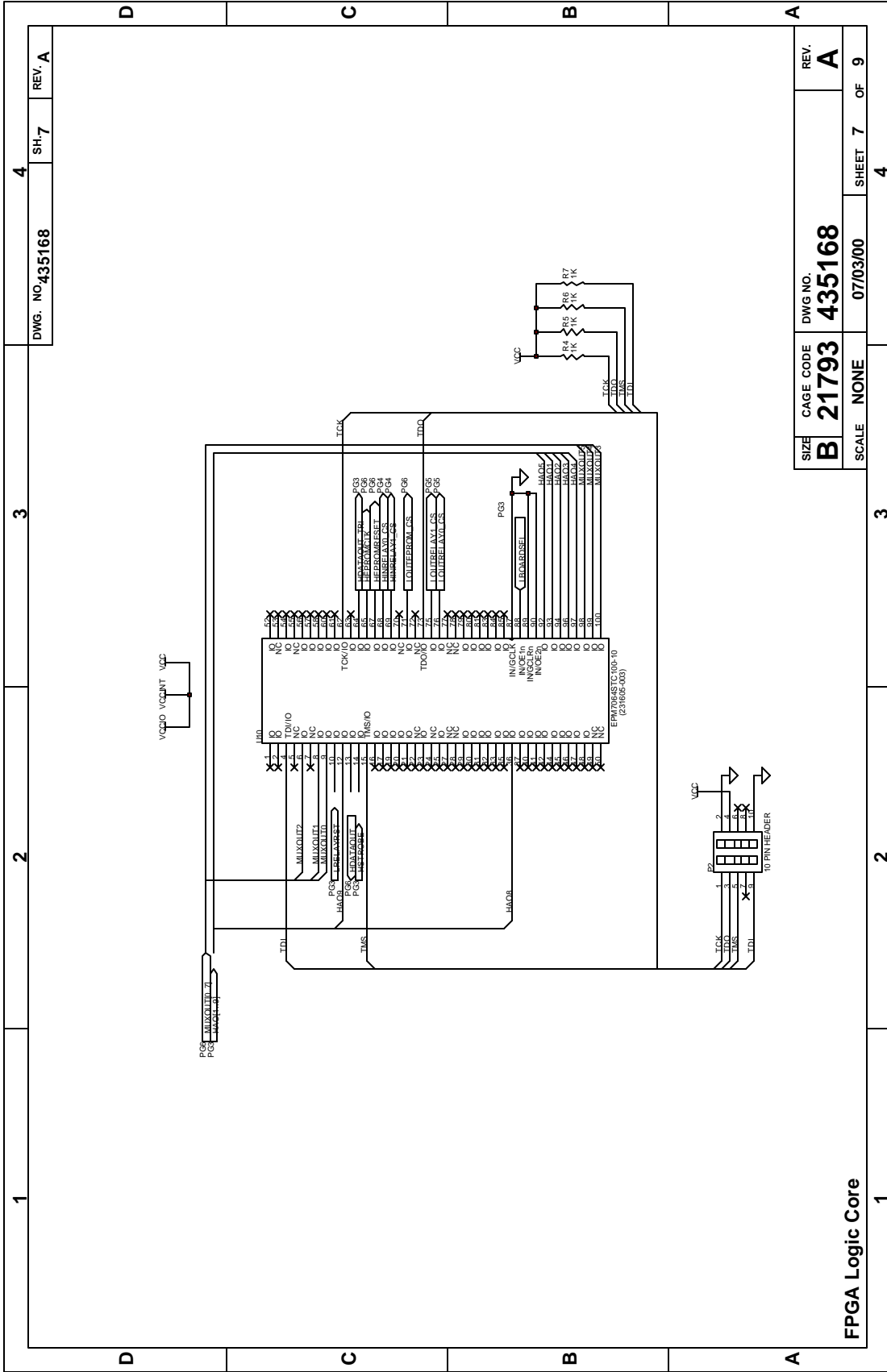


DWG. NO. 435168
SH. 5
REV. A

SIZE	CAGE CODE	DWG. NO.	REV.
B	21793	435168	A
SCALE	NONE	07/03/00	SHEET 5 OF 9

GENERAL PURPOSE I/O READBACK - PORTS A-B





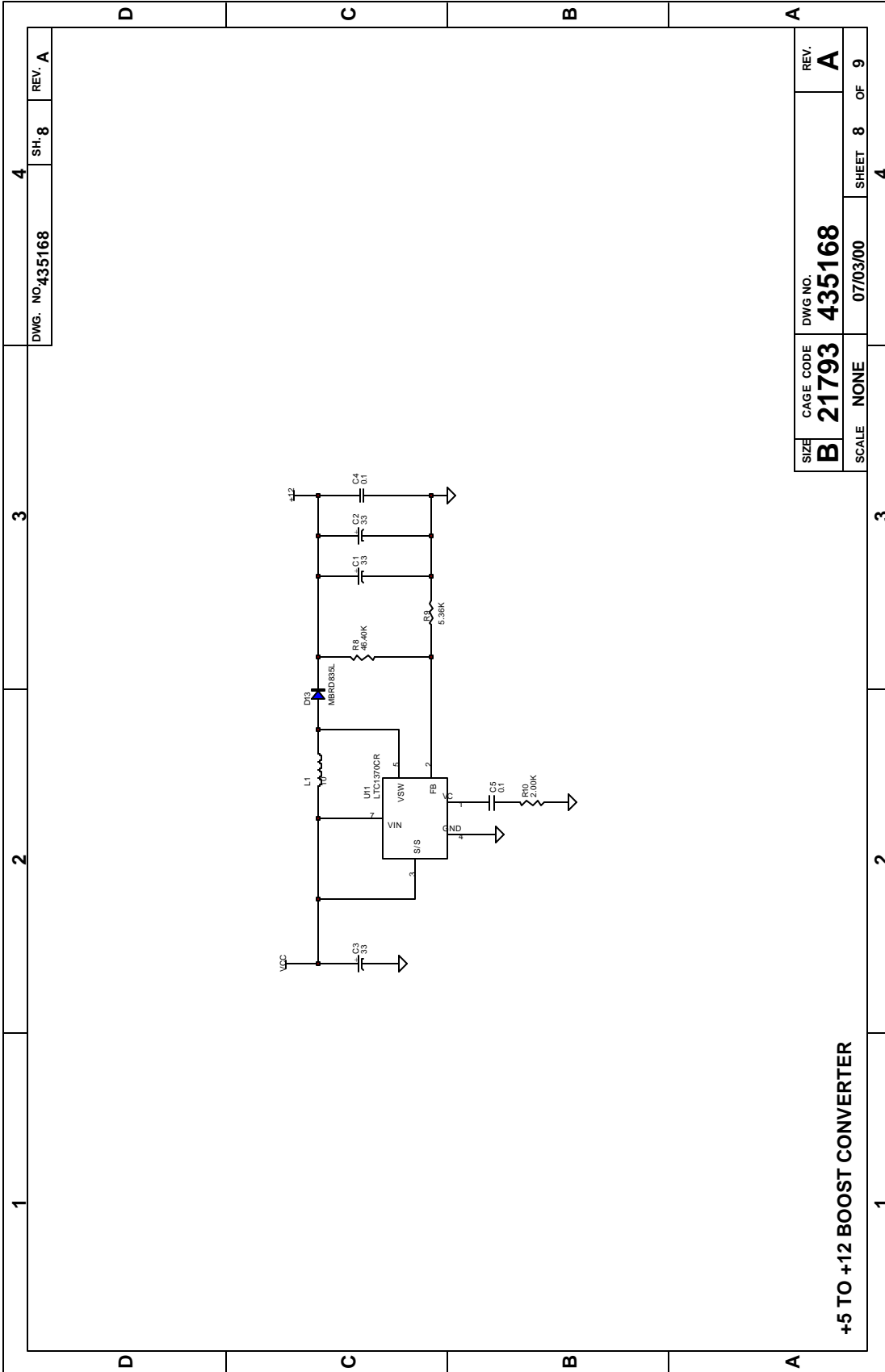
DWG. NO. 435168

4 SH-7

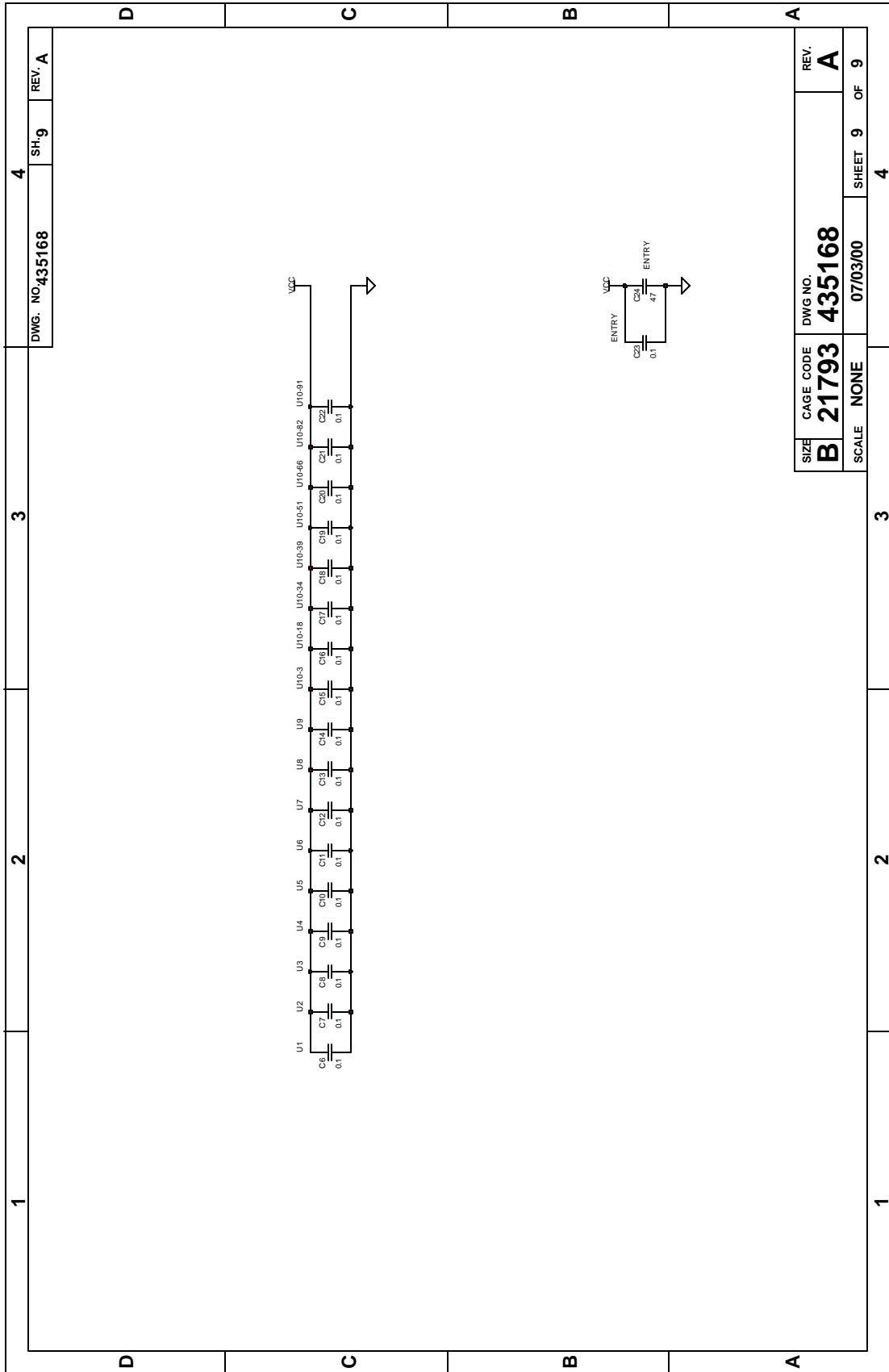
REV. A

SIZE	CAGE CODE	DWG. NO.	REV.
B	21793	435168	A
SCALE	NONE	07/03/00	SHEET 7 OF 9
			4

FPGA Logic Core



SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435168	A
SCALE	NONE		SHEET 8 OF 9
			4



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Chapter 5

PARTS LIST

40773-001	Final Assy, 1260-167A	5-3
40773-002	Final Assy, 1260-167B	5-4
405168-001	PCB Assy, 1260-167A	5-5
405168-002	PCB Assy 1260-167B	5-6

1260-167 User Manual

PSR350

1 LRMC

RACAL INSTRUMENTS INC.
Product Structure Report
By Assembly/Balloon No.

PAGE 1
10/25/00

Assembly 407773-001

Low Level Cd

U/M EA 1260-167A,1 (1X6) RF MDX -E Rev Date 8/07/00 Revision A

#	Component	Description	U/N	Qty Reqd	Engineer Txt
	405168-001	PCB ASSY, 1260-167A	-D EA	1.00000	
	980824-167	MANUAL, 1260-167	EA	1.00000	

P5R350 1 LPMC

RACAL INSTRUMENTS INC.
Product Structure Report
By Assembly/Balloon No.

PAGE 1
10/25/00

Assembly 407773-002

Low Level Cd

U/N BA 1260-167B,2 (1X6) RF MUX -E Rev Date 8/07/00 Revision A

#	Component	Description	U/N	Qty Reqd	Engineer Txt
	405168-002	PCB ASSY, 1260-167B	-D EA	1.00000	
	980824-167	NANUAL, 1260-167	EA	1.00000	

1260-167 User Manual

P5R350

1 LPMC

RACAL INSTRUMENTS INC.
Product Structure Report
By Assembly/Balloon No.

PAGE 1
10/25/00

Assembly 405168-001

Low Level Cd 1

U/N BA PCB ASSY, 1260-167A

-D Rev Date 10/03/00 Revision A

#	Component	Description	U/N	Oty Reqd	Engineer Txt
1	050000-102	RSCH2-001.00K.06W005	EA	4.00000	R4-R7
2	050000-103	RSCH2-010.00K.06W005	EA	2.00000	B1,R2
3	050000-202	RSCH2-002.00K.06W005	EA	1.00000	R10
4	050117-007	RSCH2-046.40K.10W001	EA	1.00000	R8
5	050117-008	RSCH2-005.36K.10W001	EA	1.00000	R9
6	080171	RSNW2-004.700K16P08R	EA	1.00000	Z1
7	080171-001	RSNW2-047.000K16P08R	EA	1.00000	Z2
8	110260	CPTA3-0047.0U0016v20	EA	1.00000	C24
9	100168-104	CPCH2-0100.0N0050V10%0805X7R	EA	18.00000	C4-C6,C8,C10-C23
10	130200	CPCH3-0033.040016V20	EA	3.00000	C1,C2,C3
11	210153	DISLC-075.0V00.20A-1N4148E	EA	6.00000	D14-D19
12	210154	DISPR-200.0V00.00A-1N4003E	EA	6.00000	D1-D6
13	210164	DISHY-035.0V08.00A	EA	1.00000	D13
14	231120	ICDIG-74HCT166-SHFT	EA	1.00000	U5
15	231131	ICDIG-74HCT164-SHFT	EA	1.00000	U6
16	231588-034	ICMEM-27C256-15-U9	EA	1.00000	U9
17	231597	ICLIN-514946EY-SOIC	EA	3.00000	Q1-Q3
18	231598	ICDIG-74AHCT373-TSSOP	EA	2.00000	U1,U3
19	231603	ICDIG-74HCT393-SDIC	EA	2.00000	U7,U8
20	231605-003	ICPIA-EPN7064ST-U10-TQFP	EA	1.00000	U10
21	231649	ICIIN-1370-DD	EA	1.00000	U11
22	310284	RLEM-1P6T12v0033	EA	1.00000	SW1
23	310287	CKF1-0w010.0U20%P	EA	1.00000	L1
24	407774-001	CABLE ASSY,1260-167 #1	EA	1.00000	
26	415168	PCB,1260-167	EA	1.00000	
27	456866-001	PANEL ₁ FRONT,1260-167A	EA	1.00000	
28	601731	CON-PCB-PLG16PC.100D	EA	1.00000	J1
29	601935	CON-PCB-PLG10PC.100D	EA	1.00000	P2
30	602070	CDN-PCB-PLG48PC.1003	EA	1.00000	P1
31	610899	TIE-CA-LKG-.062-2.00	EA	2.00000	
32	611323	CLP-CA-STD. N/ACN/A	EA	1.00000	
33	611444	S1CSBDR-M2.5X0.45X11	EA	4.00000	
34	615014	S1M-PPANH002-56X.250	EA	4.00000	w/SW1
35	616403	SINPFI9-M2.5X0.45X08	EA	2.00000	
36	617041	NT1HEXM2.5-0.50-STL	EA	2.00000	
37	617126	W15002.165D.015T.088	EA	4.00000	w/SW1
38	617127	w15004.202D.020T.115	EA	2.00000	

1260-167 User Manual

PSR3SO 1 LPMC

RACAL INSTRUMENTS INC.
Product Structure Report
By Assembly/Balloon No.

PAGE 1
10/25/00

Assembly 405168-002
U/N EA PCB ASSY, 1260-167B

Low Level Cd 1
-D Rev Date 10/03/00 Revision A

#	Component	Description	U/M	Oty Reqd	Engineer Txt
1	050000-102	RSCH2-001.00K.06W005	EA	4.00000	R4-R7
2	050000-103	RSCH2-010.00K.0GW005	EA	3.00000	R1,R2,R3
3	050000-202	RSCH2-002.00K.06W005	EA	1.00000	R10
4	050117-007	RSCH2-046.40K.10W001	EA	1.00000	R8
5	050117-008	RSCH2-005.36K.10W001	EA	1.00000	R9
6	080171	R5NW2-004.700K16P08R	EA	1.00000	Z1
7	080171-001	RSNW2-047.000K16P08R	EA	2.00000	Z2,Z3
8	110260	CPTA3-0047.0U0016V20	EA	1.00000	C24
9	100168-104	CPCH2-0100.0N0050V10%0805X7R	EA	20.00000	C4-C23
10	130200	CPCH3-0033.040016V20	EA	3.00000	C1,C2,C3
11	210153	DISLC-075.0v00.20A-1N4148	EA	12.00000	D14-D25
12	210154	DISPR-200.0V00.00A-1N4003	EA	12.00000	D1-D12
13	210164	DISHY-035.0V08.00A	EA	1.00000	D13
14	231120	ICDIG-74HCT166-SHFT	EA	1.00000	U5
15	231131	ICDIG-74HCT164-SHFT	EA	1.00000	U6
16	231588-031	ICMEM-27C256-15-U9-PLCCP	EA	1.00000	U9
17	231597	ICLIN-514946EY--SOIC	EA	6.00000	Q1-Q6
18	231598	ICDIG-74ABCT373-TSSOP	EA	4.00000	U1-U4
19	231603	ICDIO-74HCT393--SOIC	EA	2.00000	U7,U8
20	231605-003	ICPLA-EPN70645T-U10-TQFP	EA	1.00000	U10
21	231649	ICLIN-1370-DD	EA	1.00000	D11
22	310284	RLEM-1P6T12V0033	EA	2.00000	SW1,SW2
23	310287	CKF1-0W010.0U20%P	EA	1.00000	L1
24	407774-001	CABLE ASSY,1260-167 #1	EA	1.00000	
25	407774-002	CABLE ASSY,1260-167 #2	EA	1.00000	
26	415168	PCB,1260-167	EA	1.00000	
27	456866	PANEL,FRONT,1260-167B	EA	1.00000	
28	601731	CON-PCB-PLG16PC.100D	EA	2.00000	J1,J2
29	601935	CON-PCB-PLG10PC.100D	EA	1.00000	P2
30	602070	CON-PCB-PLG48PC.1003	EA	1.00000	P1
31	610899	TIE-CA-LKG-.062-2.00	EA	4.00000	
32	611323	CLP-CA-STD.N/ACN/A	EA	2.00000	
33	611444	S1CSBDR-M2.SXO.45X11	EA	4.00000	
34	615014	S1M-PPANH002-56X.250	EA	8.00000	w/SW1,SW2
35	616403	S1MPFL9-M2.5X0.45X08	EA	2.00000	
36	617041	NT1HEXM2.5-0.50-STL	EA	2.00000	
37	617126	W15002.165D.015T.088	EA	8.00000	w/SW1,SW2
38	617127	W15004.202D.020T.115	EA	2.00000	

Chapter 6

PRODUCT SUPPORT

Product Support

Racal Instruments has a complete Service and Parts Department. If you need technical assistance or should it be necessary to return your product for repair or calibration, call 1-800-722-3262. If parts are required to repair the product at your facility, call 1-949-859-8999 and ask for the Parts Department.

When sending your instrument in for repair, complete the form in the back of this manual.

For worldwide support and the office closes to your facility, refer to the Support Offices section on the following page.

Warranty

All Racal Instruments, Inc. products are designed and manufactured to exacting standards and in full conformance to Racal's ISO 9001 procedures.

For the specific terms of your standard warranty, or optional extended warranty or service agreement, contact your Racal customer service advisor. Please have the following information available to facilitate service:

4. Product serial number
5. Product model number
6. Your company and contact information

You may contact your customer service advisor by:

E-Mail: Helpdesk@racalinstruments.com

Telephone: +1 800 722 3262 (USA)
 +44(0) 8706 080134 (UK)
 +852 2405 5500 (Hong Kong)

Fax: +1 949 859 7309 (USA)
 +44(0) 1628 662017 (UK)
 +852 2416 4335 (Hong Kong)

Reshipment Instructions

Use the original packing material when returning the 1256 to Racal Instruments for calibration or servicing. The original shipping crate and associated packaging material will provide the necessary protection for safe reshipment.

If the original packing material is unavailable, contact Racal Instruments Customer Service for information.

Support Offices

Racal Instruments, Inc.

4 Goodyear St., Irvine, CA 92618-2002
Tel: (800) RACAL-ATE, (800) 722-2528,
(949) 859-8999; FAX: (949) 859-7139

Racal Instruments, Ltd.

480 Bath Road, Slough, Berkshire, SL1 6BE, United Kingdom
Tel: +44 (0) 1628 604455; FAX: +44 (0) 1628 662017

Racal Systems Electronique S.A.

18 Avenue Dutartre, 78150 LeChesnay, France
Tel: +33 (1) 3923 2222; FAX: +33 (1) 3923 2225

Racal Systems Elettronica s.r.l.

Strada 2-Palazzo C4, 20090 Milanofiori Assago, Milan, Italy
Tel: +39 (0)2 5750 1796; FAX +39 (0)2 5750 1828

Racal Elektronik System GmbH.

Technologiepark Bergisch Gladbach, Friedrich-Ebert-Strasse,
D-51429 Bergisch Gladbach, Germany
Tel.: +49 2204 8442 00; FAX: +49 2204 8442 19

Racal Australia Pty. Ltd.

3 Powells Road, Brookvale, NSW 2100, Australia
Tel: +612 9936 7000, FAX: +612 9936 7036

Racal Electronics Pte. Ltd.

26 Ayer Rajah Crescent, 04-06/07 Ayer Rajah Industrial Estate,
Singapore 0513.
Tel: +65 7792200, FAX: +65 7785400

Racal Instruments, Ltd.

Unit 5, 25F., Mega Trade Center, No 1, Mei Wan Road, Tsuen
Wan, Hong Kong, PRC
Tel: +852 2405 5500, FAX: +852 2416 4335